

# Spectacle Design Preferences in Oman Society

Marwa Rashid Shinain Al-Buraiki

Bachelor of Science in Optometry, College of Health Sciences, University of Buraimi, Buraimi, Oman

## ABSTRACT

**Aim:** To investigate preference of selected spectacle design in Oman population. In addition, to compare ranking of conventional spectacles frame design, and its association to age, gender, and education levels and choice of frame.

**Methods:** A questionnaire-based study was designed to evaluate the choices of frame design selection by people in Oman society. A total number of 100 participants aged from 15 years and above were selected randomly from Oman Society. The research was explained, consent obtained, completed questionnaire was collected and data was analyzed.

**Results:** An important finding in my study was that square frame design is the most popular design chosen by participants (63 out of 100), followed by browline, rimless, semi rimless, wayfarer, rectangular, aviator, navigator frame. The least preferred is half eye frame. Others results obtained relating to frame design is the weight of spectacle frame is considered as main factor affecting the wear compliance (97%), followed by color (88%), material (86%) and shape (80%). Brand of spectacle frame is least important factor affecting the wear compliance for spectacle frame (65%). Common reasons for wearing spectacle is near sightedness (myopia) in both males and females (58%) while the far sightedness (hyperopia) represents the lowest percentage for wearing spectacle (15%).

**Conclusions:** People preferred to wear square frame design and Browline frame. Color, weight, materials and brand name affect choices and wearing compliance.

**KEYWORDS:** Spectacle frames, frame selection, compliance, design, Oman

## 1. INTRODUCTION

### 1.1. Background

Glasses also known as eyeglasses or spectacles are devices consisting of glass or hard plastic lenses mounted in a frame that holds them in front of a person's eyes. Glasses is the simplest and most popular way of correcting refractive error. Lenses may be spherical, cylindrical or a mixture of both.

- Spherical lenses have a constant curvature over the entire surface and may be convex (converge light rays, known as plus lenses) or concave (diverge light rays, known as minus lenses).
- Cylindrical lenses have focusing powers in one meridian only, the orientation of which depends on the patient's problem [1].

Refractive errors may also corrected by:

- Contact lens: this option is cosmetically much better though the maintenance and cleaning of contact lenses may be cumbersome. There is also a slight risk of infection to the cornea, if the contact lenses are not cleaned properly before use.
- Refractive surgeries: these are increasingly becoming popular with the advent of more predictable laser treatments.

### Refractive error:

The function of the eye is to see clearly the objects around us. The inability of the eye to accurately focus the rays of

light coming from distance on the retina is called refractive error. This condition may be either because the eye is too short or long in length, or because the cornea or lens does not have the required refractive power. Refractive errors commonly account for half or more of impaired vision in most surveyed populations<sup>1</sup>. The prevalence of refractive errors has been found to vary across race and geographic location, gender, age, educational level and amount of near work, and parental education.

Refractive errors include

### Myopia (near- sightedness):

This is the condition in which the eye is too long and the light is focused in front of the retina. Distant objects are blurred but the near objects are seen clearly. The eye has too much optical power and to correct it the optical power is reduced by either minus glasses or contact lenses, or by surgery.

### Hypermetropia (long-sightedness):

This is the condition in which the eye is too short and the light is focused behind the retina. The eye has less optical power than is needed. When young, the eye can use the lens within the eye to compensate, but reading glasses or plus glasses are needed at a relatively early age. Later, distance glasses are needed as well, such that glasses for distance plus and near are required.

**How to cite this paper:** Marwa Rashid Shinain Al-Buraiki "Spectacle Design Preferences in Oman Society" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-4 | Issue-3, April 2020, pp.644-649, URL: [www.ijtsrd.com/papers/ijtsrd30621.pdf](http://www.ijtsrd.com/papers/ijtsrd30621.pdf)



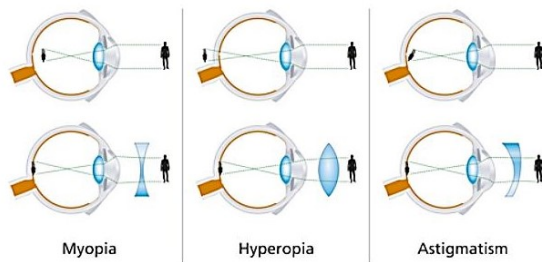
IJTSRD30621

Copyright © 2020 by author(s) and International Journal of Trend in Scientific Research and Development Journal. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0) (<http://creativecommons.org/licenses/by/4.0>)



**Astigmatism:**

This is the condition where the eye does not focus the light evenly, usually due to the cornea of the eye being more curved in one direction than the other. It may occur on its own or may be associated with myopia or hypermetropia [2].



Uncorrected refractive error remains the leading cause of vision loss between 6/18 and 3/60, and the second-leading cause of blindness in the world. Though refractive error may be safely and reliably corrected with inexpensive spectacles, a very substantial burden of visual disability persists, particularly in developing areas, due to a lack of refractive services and the frequency of inaccurate spectacles that do not adequately correct vision. Uncorrected refractive error is associated with significant self-reported visual disability among children, which is readily remediable when glasses are provided. [3]

Other reasons for spectacle wear include eye protection, to conceal eyes defects and as a fashion accessory. Despite the increasing popularity of contact lenses and refractive surgery, the use of spectacle remains the most popular method of correcting refractive errors [4].

The design of the frame that can affect wear includes aspects such as:

Size – example: small, medium, or large.

Shape – example: round, square, or oval.

Material – example: plastic, metal, or grown glass

Color – example: black, brown, blue, red, etc.

The design of spectacle can have influence on spectacle wear compliance [5]. Points to note when choosing eyeglasses frames:

1. People with severe refractive errors may choose plastic frames, as they are thick enough to cover the edge of the thick lenses for a better look.
2. The size of the frame should match the size of the face and the head. The larger the frame, the bigger and heavier the lenses will be. However, smaller frames mean smaller peripheral vision.
3. The width of the frame should be similar to that of the head so that the arms will not press against the head nor too far from the head.
4. People who are accustomed to removing their eyeglasses with one hand should choose frames with spring hinges. These are not easily distorted and damage is usually milder.
5. The length of the arm should match the distance between the eye and the ear. Arms that are either too long or too short are uncomfortable.
6. People with flat nose should choose frames with nose pads because these can fix the position of the frame and prevent it from sliding down and being too close to the face. It is more comfortable [6].

**1.2. Literature review**

A study by Zhou; et al<sup>[3]</sup> identified the specific characteristics in making glasses designs, particularly those compatible with adjustable glasses, more or less appealing to Chinese children and their parents. The main outcome are Current adjustable lens designs are unattractive to Chinese children and their parents.

Aaron M; et al<sup>[7]</sup> studied the prevalence and determinants of compliance with spectacle wear among school-age children in Oaxaca, Mexico, who were provided spectacles free of charge. The study showed that oval frames, which are more expensive, could be dispensed to those in city areas. Round frames could be used in rural areas where compliance is less problematic.

The study by Sakamoto Y; et al<sup>[8]</sup> found the relationship between eyeglasses size and protection of the eye surface from the effects of solar ultraviolet (UV) rays was investigated. The main outcome are the efficacy of eyeglasses against UV depends on their size and shape. Small eyeglasses do not offer ideal UV protection for the Japanese face shape.

In another study done by Alderson; et al<sup>[9]</sup> compared spectacles bought online with spectacles from optometry practices. They concluded that greater number of online spectacles were deemed unsafe or unacceptable because of poor spectacle frame fit, poor cosmetic appearance, and inaccurate optical centration.

Vivasan; et al<sup>[10]</sup> understood the profiles of the patient who attended and chose to purchase spectacle from the public sector eye clinics in KwaZulu Natal, South Africa. In addition, to explore patient perception of the spectacle frames on offer and to understand the motivation of the patient in selecting their spectacle frames. They found that high acceptance by patients of the range of spectacles offered in public sector eye clinics with specific suggestions to improve it.

Messer; et al<sup>[11]</sup> investigated factors associated with spectacle wear in a group of primarily Native American children provided spectacles free of charge through a school-based vision program. The main outcome despite being provided with two pairs of spectacles, loss and breakage were the most commonly reported reasons for not wearing spectacles. The best predictive factor for determining whether participants were wearing spectacles was their uncorrected acuity

The study Abdulkabir A; et al<sup>[4]</sup> evaluated challenges, attitudes and practices among spectacle wearers to effect positive change when necessary, and determine positive change in a resource-limited economy. Show that Attitudes and practices requiring positive change crossed gender and educational levels among spectacle wearers. The cost of spectacles should be regulated and availability of standard eye care practices would reduce challenges including lens-related defects and quackery.

Furthermore, Khandekar; et al<sup>[12]</sup> determined the degree of compliance of spectacle wear and some of its determinants among school children of Dhakhiliya region of Oman. They found that The study identifies the factors of high-risk of non-compliance as (a) male gender, (b) younger age, and (c) low myopic refractory error. The eye health care program of

Oman should focus on these high-risk groups to further improve the compliance for visual aids.

In another study, school children Luminita- Adela et al<sup>[13]</sup> assessed the compliance in school children aged between 5 to 12 years in the treatment of refractive errors by optical correction with glasses. They showed that a positive impact, managing to increase student compliance to treatment with 161%. By default, the future must look for new ways to improve these data, which actually reflects the quality of life for children.

The study done by Vincent; et al<sup>[14]</sup> assessed wearing compliance of those who received ready-made spectacles. The main outcome that spectacle wearing compliance studies will not be comparable unless a standard time frame is used to assess compliance. They found assessing self-reported compliance to be a useful tool in guiding our program. Understanding the reasons for non-compliance will help guide corrective action and planning of interventions designed to increase wearing rates.

### 1.3. Rationale for the Study

Cosmetic appearance of spectacle may be a factor in spectacle wear compliance. Knowledge of spectacle design preference in Oman has not been studied. A personal reason for choosing this topic is from previous experience of no guidance in selection of spectacle frame including the correct way and other wrong way, so I wanted knowledge on basic rules in choosing the spectacle frame and helping others.

### 1.4. Aim of Study

To investigate preference of selected spectacle design in Oman population. In addition, to compare ranking of conventional spectacles frame design, and its association to age, gender, and education levels and choice of frame.

## 2. MATERIALS AND METHODS

A questionnaire-based study is designed and ethical approval was taken before starting the study. The questionnaire contained multiple-choice question, close-ended question. In the questionnaire, participant was asked to choose the best three of spectacles frame design among ten frame designs in a questionnaire paper. Other details are in Appendix. A total number of 100 participant aged from (15 & above) were selected randomly from Oman Society. The people who had refractive errors and using spectacle for the correction of error on regular basis were included. Also included are people who want to wear glasses in the future for refractive error correction participant reasons include students from schools and universities, worker, or non-workers, male or female, and anyone over the age of eleven years. People with normal vision or those with refractive error but not using spectacle on regular basis for correction of refractive error were excluded from the study and People younger than 15 years old, who do not have the desire to wear glasses and older people aged over 60 years. Questionnaire was distributed to both male and female in different education levels such as secondary school, diploma, bachelor, master and doctoral levels. They were asked to answer the questionnaire paper in several ways by using E-mail and the social media program such as WhatsApp and Black Berry Messenger (BBM) to get the answer fast. The data collected by counting how many Yes and No in close-

ended question and the best three of spectacles frame design between ten frames. Collected data was analyzed by using appropriate statistical tool such as Microsoft office Excel and Word program to have different Figuredesign and then finding the results. The questionnaire data were analysed by using appropriate statistical tool such as Microsoft office Excel and Word programs.

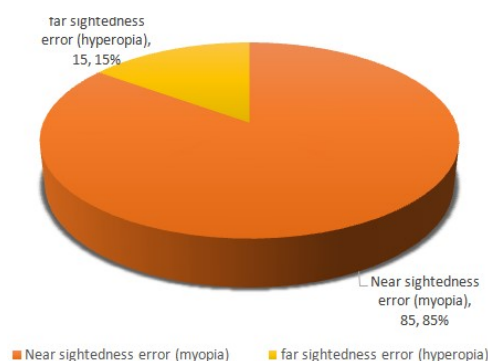
## 3. RESULTS

Table 1 shows that total number of sample size was 100, age of the participant in Oman society ranged from 15 to 60 years. Total number of female who using spectacle for the correction of error represented 70% and male 30% of total simple size. Approximately half of the respondents surveyed were age between 15 – 20 years old (39%) with mean of 17.5 (SD:1.87) and age between 21 – 30 years old (43%) with mean of 25.5 (SD:3.0). Those aged rang of 31 to 40 years old and from 41 to 60 years old represented the lowest percentage formed less than 10% of total size. The level of education included: secondary school, diploma, bachelor, master and doctoral. The majority of participant with bachelor degree education was (51%), than secondary school was (21%), diploma (14%), follow by the lowest percentage of master (6%) and doctoral (8%).

**Table1. Demographics data of participants in Oman society (n=100).**

Characteristics	Number	%
<b>Gender</b>		
Male	30	30%
Female	70	70%
<b>Age</b>		
15-20 years	39	39%
21-30years	43	43%
31-40 years	9	9%
41 years& above	9	9%
<b>Level of education</b>		
Secondary School	21	21%
Diploma	14	14%
Bachelor	51	51%
Master	6	6%
Doctoral	8	8%

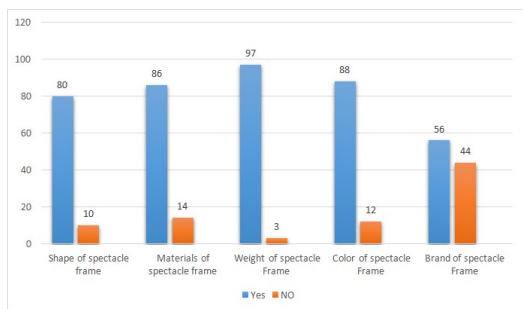
Figure1 it explaining the refractive reason for wearing spectacle. There were more near sightedness participants that were wearing spectacle.



**Figure1. percentage of participants wearing spectacles according to refractive error.**

Figure2 shows that weight of spectacle frame considered as main factor that affects the wearing compliance, while brand of spectacle frame is least important factor affecting the wearing compliance for spectacle frame.





**Figure2. Design factors affecting the wearing compliance for spectacle frame**

The preference for frame design is as follow highest to lowest:

Out of 100 participant, 63 chose square frame (Figure3).



**Figure3. Square frame design**

Out of 100 participant, 53 chose browline frame (Figure4).



**Figure4. Browline frame design**

Out of 100 participant, 43 chose rim less frame (Figure5).



**Figure5. Rimless frame design**

Out of 100 participant, 36 chose semi rim less frame (Figure6).



**Figure6. Semi rim less frame design**

Out of 100 participant, 36 chose large square frame (Figure7).



**Figure7. Wayfarer frame design**

Out of 100 participant, 27 chose rectangular frame (Figure8).



**Figure8. Rectangular frame design**

Out of 100 participant, 22 chose aviator frame (Figure9).



**Figure9. Aviator frame design**

Out of 100 participant, 9 chose navigator frame (Figure10).



**Figure10. Navigator frame design**

Out of 100 participant, 5 chose cat eye frame (Figure11).



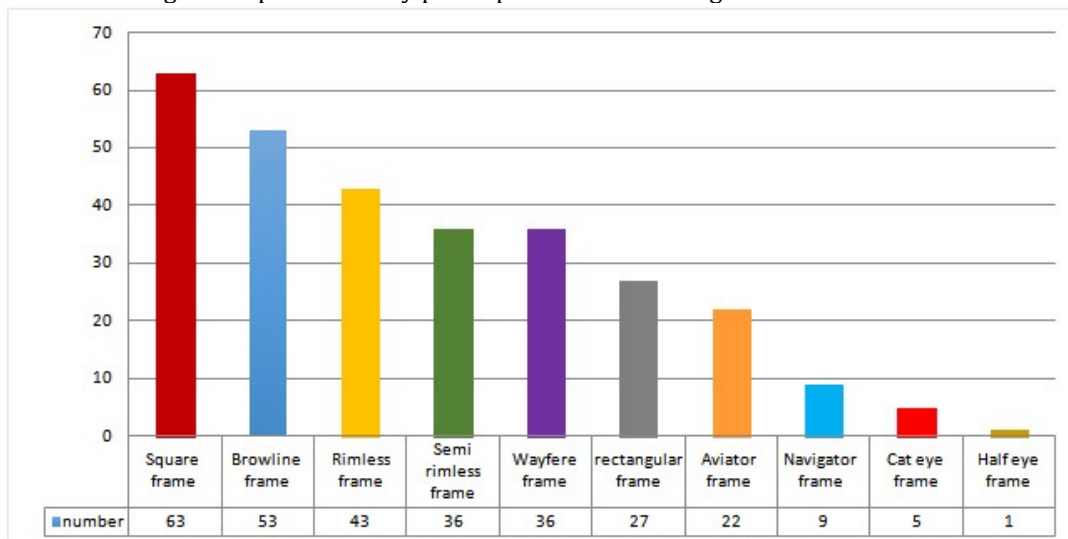
**Figure11. Cat eye frame design**

Out of 100 participant, 1 chose half eye frame (Figure12).



**Figure12. Half eye frame design**

A summary of all frame designs and preference by participant is shown in Figure13.



**Figure13. Summary of frame design preference according to number of participant**

#### 4. DISCUSSION

This study was designed to investigate preference of selected spectacle design in Oman population. In addition, to compare ranking of conventional spectacles frame design, and its association to age, gender, and education levels and choice of frame. An important finding in my study was that square frame design is the most popular design chosen by participants (63 out of 100), followed by browline, rimless, semi rimless, wayfarer, rectangular, aviator, navigator frame. The least preferred is half eye frame. Others results obtained relating to frame design is the weight of spectacle frame is considered as main factor affecting the wear compliance (97%), followed by color (88%), material (86%) and shape (80%). Brand of spectacle frame is least important factor affecting the wear compliance for spectacle frame (65%). Common reasons for wearing spectacle is near sightedness (myopia) in both males and females (58%) while the far sightedness (hyperopia) represents the lowest percentage for wearing spectacle (15%).

Square frame is the most popular design chosen by participants in this study. This is similar to the result obtained in Chinese study<sup>[3]</sup> in which both children and parents preferred square frame. This may because it is the suitable for faces shape and all age groups<sup>[3]</sup>. It is less expensive compared to other frame design<sup>[3]</sup>. Age may be a factor in selection but my study has been similar to the age of the parents in their study (though the age of parent were stated).

Browline is the second most popular frame design among participant in this study. Similar result was obtained in the Chinese study<sup>[3]</sup>. Browline and square frames design were both children and parents preferred than other frames. In other study<sup>[7]</sup> square frames are more expensive, so it was recommended to be dispensed in the city where people have higher salaries. Round frames are less expensive and can be dispensed in rural areas where compliance is less problematic.

Other frame designs such as browline, rimless, semi rimless, wayfarer, rectangular, aviator, navigator, cat eye and half eye frames designs were least popular.

Half eye design is the least popular design chosen by participants in this study. Half eye is used by older people for reading only. This may older people (the age 41 and above) were only 9 participant. So more research can confirm this finding by including more older participants. Also

most older people prefer large glasses for reading or they have better options with more benefits such as bifocal, multifocal and progressive glasses. Bifocal glasses is created with two different areas of vision correction, the top portion of lens is used for distance, while the bottom portion of the lens is used for closer vision. Progressive glasses have multiple vision correction include near, intermediate and distance.

Other aspects related to frame design obtained on this research are weight, color, materials and brand of spectacle frame. In present study, weight of spectacle frames had a major influence (97%) on wearing compliance it is least preferred. This may because the heavy frame tend to cause headaches or fatigue of the eye and more likely to slip off the

nose often. Study done by Julia and Eugene<sup>[15]</sup> which also showed an increase in weight of frames could decrease perceptions of attractiveness.

In present study the most common types of refractive error in both males and females were near-sightedness (85%) similar to the study done in Muscat<sup>[16]</sup>, where near-sightedness was (95%). Farsightedness is distributed more in female than male, which was similar to this study also. It has noted that high myopes glasses are better with thick frame to hide the thick edge of the concave lenses. Myopes preferred in this study black square frames.

Black is preferred by many according Zhou et al<sup>[3]</sup>. Material and brand name need to be researched as in supporting literature was found.

Further study on frame designs is needed to included higher sample size and older people to obtain better results.

#### CONCLUSION

People preferred to wear square frame design and Browline frame. Color, weight, materials and brand name affect choices and wearing compliance.

#### REFERENCES

- [1] Glasses. Wikipedia Web site. <https://en.wikipedia.org/wiki/Glasses> . Accessed March 8, 2017.
- [2] Refractive Errors & Treatment. Synergy Visitech Eye Centre Web site. <http://www.synergysight.com/refractive-errors-treatment.html>. Accessed March 11, 2017.
- [3] Zhou Z, Kecman M, Chen T, Liu T, Jin L, Chen S, et al. Spectacle Design Preferences among Chinese Primary and Secondary Students and Their Parents: A Qualitative and Quantitative Study. Plos One 2014; 9 (3):e88857.
- [4] Ayanniyi AA, Adepoju FG, Ayanniyi RO, Morgan RE. Challenges, attitudes and practices of the spectacle wearers in a resource-limited economy. Middle East African journal of ophthalmology 2010 Jan 1; 17(1): 83-87.
- [5] Spectacle wears compliance. Optician Web site. <https://www.opticianonline.net/features/spectacle-wear-compliance>. Accessed November 1, 2016.
- [6] How to choose eyeglasses frame Student Health Service Web site. [http://www.studenthealth.gov.hk/english/health/health\\_ev/health\\_ev\\_eg.htm](http://www.studenthealth.gov.hk/english/health/health_ev/health_ev_eg.htm). Accessed October 4, 2016.
- [7] Holguin MAC, Congdon N, Patel N, Ratcliffe A, Estes P, Flores ST, et al. Factors Associated with Spectacle-Wear Compliance in School-Aged Mexican Children. Ophthalmology & Visual Science 2016; 47:925-928.
- [8] Sakamoto Y, Kojima M, Sasaki K. Effective of eyeglasses for protection against ultraviolet ray. Japanese Journal o-f Ophthalmology 1999; 43:566-567.
- [9] Alderson A J, Green A, Whitaker D, Scally A J, Elliott D B. A Comparison of Spectacles Purchased Online and in

UK Optometry Practice. Optometry and Vision Science 2016; 93: 1196-1202.

- [10] Vivasan P, Fai C V, S C F, Naidoo, S k. How do patient choose their spectacle in public sector of South Africa. Optometry and Vision Science 2016; 93:235-242.
- [11] Messer DH, Mitchell GL, Twelker JD, Crescioni M, CLEERE Study Group. Spectacle wear in children given spectacles through a school-based program. Optometry and vision science: official publication of the American Academy of Optometry. 2012 Jan; 89(1):19-26.
- [12] Khandekar R, Mohammed AJ, Al Raisi A. Compliance of spectacle wear and its determinants among schoolchildren of Dhakhiliya region of Oman: A descriptive study. SQU J Scien Res: Med Sci. 2002 Apr;1:39-43
- [13] Turcin LA, Jompan A. COMPLIANCE OF THE STUDENTS TO THE REFRACTIVE ERRORS CORRECTION WITH GLASSES. Studia Universitatis" Vasile Goldis" Arad. Seria Stiintele Vietii (Life Sciences Series). 2013 Jul 1; 23(3): 257-263.
- [14] Vincent JE, Netek S, Parry A, Mladenovich D, Thein NN, Amendola PR. Reported wearing compliance of ready-made spectacles at 6 and 12 months. Optometry & Vision Science. 2010 Dec 1; 87(12):958-65.
- [15] Julia K, Eugene P. The Effects of Glasses and Weight on Perception of Attractiveness and Intelligence. SBP Journal, 1994;9:753-60.
- [16] Khandekar RB, Abdu-Helmi S. Magnitude and determinates of refractive error in omani school children. Saudi Med J, 2004; 25: 1388-1393.



Browline frame



Wayfarer frame



Square frame



Rectangular frame



Cat eye frame



Rimless frame



Half eye frame



Semi rimless frame



Aviator frame



Navigator frame

### Spectacle Design Preferences in Oman Society

Dear Madam/Sir:

I am conducting a research on Spectacle Design Preferences in Oman Society. I would appreciate if you kindly answer the following questionnaires. All information is strictly confidential and will not be used for any other purpose than my undergraduate project.

#### Section 1:

##### 1) Gender:

Male ☐ Female ☐

##### 2) Age:

15-20 years ☐ 21-30years ☐  
31-40 years ☐ 41 years& above ☐

##### 3) What is your level of education?

Secondary School ☐ Diploma ☐  
Bachelor ☐ Master ☐  
Doctoral ☐ Others \_\_\_\_\_

#### Section 2:

Please write 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> choice beside the number of the frame design you prefer.

#### Section 3:

##### Q1: For which eye problem are you wearing spectacle?

1. (nearsightedness) 2. (farsightedness)

##### Q2: Do you think the frame shape is important in wearing compliance?

1. (yes) 2. (no)

##### Q3: Do you think the material of the frame affects wearing compliance?

1. (yes) 2. (no)

##### Q4: Do you think the weight of the frame affect wearing compliance?

1. (yes) 2. (no)

##### Q5: Does the color of the frame affect the wearing compliance?

1. (yes) 2. (no)

##### Q6: Do you think the brand of the frame affects the wearing compliance?

1. (yes) 2. (no)